PROJECT 18A

Tehama County Water Inventory and Analysis

1. Project Description

Project Type:	**Groundwater/surface water planning**
Location:	**Tehama County**
Proponent(s):	**Tehama County Flood Control and Water Conservation District**
Project Beneficiaries:	**Tehama County (particularly municipal) users, out-of-county users, the Delta**
Total Project Components:	**Short-term components, using the information gained to help establish the need and feasibility of future water projects**
Potential Supply:	**To be determined**
Cost:	**Total cost unknown but includes short-term cost of $330,000**
Current Funding:	**$190,000 AB 303 grant**
Short-term Components:	**Information gathering process and analysis**
Potential Supply (by 2003):	**None**
Cost:	**$330,000**
Current Funding:	**$190,000 AB 303 grant**
Implementation Challenges:	**No significant challenges for the water inventory and analysis; future challenges – local concerns regarding groundwater overdraft, land subsidence, groundwater export**
Key Agencies:	**Tehama County, California Department of Water Resources (DWR), cities and districts within Tehama County**

Summary

Tehama County is experiencing increased population growth, changing agricultural demands from increased conversion to permanent crops, in-stream flow fish passage requirements, and increased groundwater pumping affecting the county's water supply reliability. The proposed comprehensive water supply analysis would allow for informed decision making related to surface- and groundwater supply. The project would also promote many of the CALFED objectives and solution principles by providing baseline data promoting water quality for all beneficial uses. Figure 18A-1 provides a map of Tehama County and various affected cities and districts. The Tehama County Flood Control and

Water Conservation District adopted the Tehama County Groundwater Management Plan (AB 3030 Plan) in 1998. The District's AB 3030 groundwater management plan needs critical data to continue implementation. The proposed project is to conduct a water inventory and analysis for Tehama County. The analysis would consist of acquiring and assembling historical and current data of the geology and hydrology, documenting the current surface- and groundwater demand and supply, and determining the relationship between surface water deliveries and the effect on groundwater demand and recharge. The study would also examine water quality and environmental concerns.

This baseline data is critical for determining the effects of restoring flows in Mill Creek, Deer Creek, or others for salmon habitat. Numerous surface water diversions are in the Tehama County tributaries. Decreased diversions for environmental purposes would likely result in increased groundwater pumping. The proposed project would look at these effects to help evaluate any current or future change-of-use proposals.

Short-term Component

The water inventory and analysis is a short-term project that is required prior to any future surface- or groundwater project in Tehama County. The project is ready to proceed and is expected to be completed 1 year after funding. This project does have long-term implications by providing a baseline of data and information that would be used in future projects. The short-term project components are summarized below.

Background and Overview

An overview of the study scope would be defined along with a list of participating agencies. Background information would include the history of water use within Tehama County. Other AB 3030 plans of water companies and water districts within the county would be examined as well as neighboring counties. A detailed scope would be part of this initial task of the project.

Documentation of Current and Historical Geology and Hydrology

The geology and hydrology of the Sacramento Basin and Redding Basin within the county would be documented from past studies. All existing and potential groundwater recharge zones would be identified. A map with all monitored groundwater wells would be completed. The county would establish a historical and updated database for well level monitoring. This process would lead to a recommendation of additional groundwater monitoring wells in areas of the county that lack monitoring facilities.

Water Supply and Demand

Surface water supplies and suppliers in Tehama County would be documented. Acreage of water districts would be tabulated and demands quantified. All groundwater use would be documented for water districts, including parts of the Sacramento and Redding groundwater basins. A normal- and drought-year analysis would look at supplies, demands, shortage, and the impacts on groundwater.

Identification of Current and Historical Water Trends in Tehama County

The analysis would include identifying water use trends in the county for both surface and groundwater. Included would be agricultural, domestic, municipal, and environmental water uses.

Address Additional Concerns

Countywide water issues and additional concerns would be identified and addressed as part of this planning study. Potential water quality issues are nitrates, pesticides, agricultural runoff, saline intrusion, and methyl tributyl ethylene (MTBE) and trichlorethylene (TCE) contamination. Flooding and stormwater runoff would be addressed in this project. Environmental issues include conservation, in-stream flows, Endangered Species Act (ESA) species, and fish passage.

Public Outreach

Another sub-task is an outreach program that would enhance cooperation among water agencies and promote the County's AB 3030 Plan. The Basin Management Objectives Memorandum of Understanding would be promoted among agencies and landowners. The key component of the outreach program is establishing a "Zone Advisory Committee" for each of the 10 DWR sub-basins in Tehama County. These committees would establish the basin management objectives by involving the public and a wide range of water interest groups and agencies. Any future conjunctive management projects would require broad public involvement and acceptance.

Long-term Component

The primary purpose of this evaluation is to evaluate the potential for this project to provide water supply benefits in the short-term (by end of 2003). As part of this initial evaluation, potential long-term components of the proposed project (defined as any part of the project proceeding past or initiated after December 2003) have been considered on a conceptual level. Further consideration and technical evaluation of long-term component feasibility and cost will occur as the next level of review under the Sacramento Valley Water Management Agreement. Long-term-component project descriptions are included in these short-term project evaluations only as a guide to the reader to convey overall project intent.

This project is not a long-term undertaking, but would provide much-needed information to help establish the need and feasibility of future water projects. The water inventory and analysis is a necessary step prior to any surface water or groundwater project that would provide local or downstream benefits.

2. Potential Project Benefits/Beneficiaries

The proposed water inventory and analysis is essential for future development of Tehama County's water supply. Although the quantity of additional water that may be identified is undetermined, programs such as conjunctive management could lead to new or increased water yields. Of course, any conjunctive management program would seriously evaluate the possibility of groundwater overdraft, which could impact both supply and the local environment. The water inventory and analysis would need to precede such an extensive study/model.

This project is strictly an inventory and analysis of Tehama County's existing and potential water supply. Immediate physical benefits as they relate to water supply, water management, the environment, and water quality would not materialize. However, there is a high expectation that projects identified in this study would yield numerous benefits. Anticipated benefits of possible future work are summarized below.

Water Supply Benefits

Initially, this project would not increase supply for local area water shortage. This project would document the existing water demand and supply conditions and also investigate current water resource trends. This would be a first step in implementing the Tehama County AB 3030 Plan. The data collected and resulting analysis would be a baseline for future water resources planning in the county. Potentially, this effort could lead to more groundwater use and conjunctive management with the possible benefit of increasing the overall water supply reliability in Tehama County. Decreasing in-county surface water diversions could make more water available for out-of-county users. Locally, the water inventory and analysis could assist in identifying water-short areas and thus lead to firming of supplies.

Water Management Benefits

This project would be a first step in understanding the current water management of the county as a whole and providing information for better water supply decision making. Understanding the management trends for water use and supplies could lead to more reliable supply for all water users in Tehama County, particularly in drier years. This analysis has the potential to benefit any future conjunctive management programs. Recharge areas would be identified, which could lead to improved management of flood flows in Antelope Creek or Thomas Creek and others, in addition to reducing concerns associated with groundwater overdraft. Flood flow peaks could be reduced by diverting and storing to enhance environmental and agricultural use later. Another important aspect would be public involvement with the county's groundwater resources, which would be required for implementation of any future groundwater program.

Environmental Benefits

This study would include an inventory of demands and supplies set aside for environmental uses within Tehama County. A potential outcome of this project could be increased conjunctive management and reduced surface water diversions during times of low flows in the Sacramento River or its tributaries. Increased in-stream river flows would be expected to benefit fisheries and could help meet Delta water quality standards.

Water Quality Benefits

Groundwater quality is critical to all users in Tehama County, but to municipal users in particular, who rely entirely on groundwater. The analysis would look at the effect of wet and dry years on groundwater pumping and the possible water quality implications and sources of groundwater contamination. Further, any increase of in-stream flows within Sacramento River and tributaries would be expected to yield improved water quality, e.g., decreased concentration of constituents, both in and out of basin.

3. Project Costs

The cost opinions shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation from the information available at the time of the estimate. It is normally expected that cost opinions of this type, an order-of-magnitude cost opinion, would be accurate within +50 to –30 percent. Project costs were developed at a conceptual level only, using data such as cost curves and comparisons with bid tabs and vendor quotes for similar projects. The costs were not based on detailed engineering design, site investigations, and other supporting information that would be required during subsequent evaluation efforts.

The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs will vary from the opinions presented here. Because of these factors, project feasibility, benefit/cost ratios, risks, and funding needs must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

Table 18A-1 presents the total implementation cost.

Funding for this project in the amount of $140,000 is requested. The proposed project has been estimated to cost $330,000. Tehama County applied for an AB 303 grant for this project in 2001, and was recommended for $190,000 in funding. The Tehama County Flood Control District has committed to providing in-kind services in support of this project totaling $35,000.

TABLE 18A-1
Implementation Costs
Tehama County Water Inventory and Analysis

Task	Estimated Cost
Background and Overview	$12,000
Documentation of Current and Historical Geology and Hydrology	$50,000
Water Supply and Demand	$100,000
Identification of Current and Historical Water Trends in Tehama County	$25,000
Address Additional Water Concerns	$13,000
Public Outreach	$40,000
Overall Technical Assistance and Analysis	$90,000
Total	**$330,000**

The proposed inventory and analysis is dependent upon technical assistance and water resources research by the DWR Northern District. Recent discussions between Tehama County and the Northern District have indicated that they will provide technical support if funding is secured. The Northern District's technical support role would be similar to their role in the recently completed Butte County water inventory and analysis.

4. Environmental Issues

The proposed water inventory and analysis would not involve any environmental permitting requirements. Any proposed water project resulting from this study would need to consider the environmental implications and regulations.

A draft California Environmental Quality Act (CEQA) checklist was not prepared for this proposed project because no physical alterations to the environment would occur as a result of this proposed action.

5. Implementation Challenges

Establishing a baseline of groundwater-related information should not create any opposition. Implementing some of the groundwater management scenarios could meet some local opposition by those concerned about overdraft or land subsidence. Potential impacts on rivers as a result of increased groundwater pumping would need to be addressed. A general uneasiness about the development of groundwater in the region and potential export exists because of lack of information. The proposed water inventory and analysis is a critical step to obtaining information and involving the public. The numerous stakeholders that would be directly involved with the water inventory and analysis are listed in Table 18A-2.

TABLE 18A-2
Stakeholder Roles and Issues
Tehama County Water Inventory and Analysis

Stakeholder	Role	Issues
Tehama County Flood Control and Water Conservation District	Lead agency	Implement AB 3030 Plan and promote countywide consensus-building program with respect to water resources
Corning Water District	Support project, provide monitoring data	Protect agricultural supplies
El Camino Irrigation District	Support project, provide monitoring data	Protect agricultural supply, which is 100 percent groundwater
Rancho Saucos Water District	Support project, provide monitoring data	Protect agricultural supplies
Rio Alto Water District	Support project, provide monitoring data	Protect municipal groundwater supply
City of Corning	Advisory committee, provide monitoring data	Protect municipal groundwater supply
City of Red Bluff	Advisory committee, provide monitoring data	Protect municipal groundwater supply
City of Tehama	Support, provide monitoring data	Protect municipal groundwater supply
University of California Cooperative Extension	Public outreach	Include project in extension newsletter and distribute to Tehama, Glenn, Shasta, Colusa counties
Tehama County Resource Conservation District	Support county plan	Coordinate with county on effects of in-stream flows on tributaries and ground-water; environmental involvement
AB 3030 Plan Technical Advisory Committee	Represent all county interests	Provide countywide input and technical guidance required for plan implementation
Northern District Department of Water Resources	Coordination, data collection, land use mapping	Provide technical assistance and data to project

6. Implementation Plan

The water inventory and analysis is a short-term project that is ready to proceed when funding is secured from the AB 303 grant and requested funding from the Sacramento Valley Water Management Agreement. The initial task for Tehama County would be to select a qualified consultant to do the work and develop a detailed scope. The project would be completed within 1 year of funding. A preliminary implementation schedule is shown on Figure 18A-2.

The proposed project is anticipated to lead into water management and/or water supply projects benefiting Tehama County stakeholders and possible downstream interests. There is potential that some pilot projects related to conjunctive management in Tehama County could result from the recommendations in the report. Another future implementation activity would be to construct new multi-completion monitoring wells in each of the 10 subbasins within Tehama County or areas identified in the water inventory that lack groundwater data.

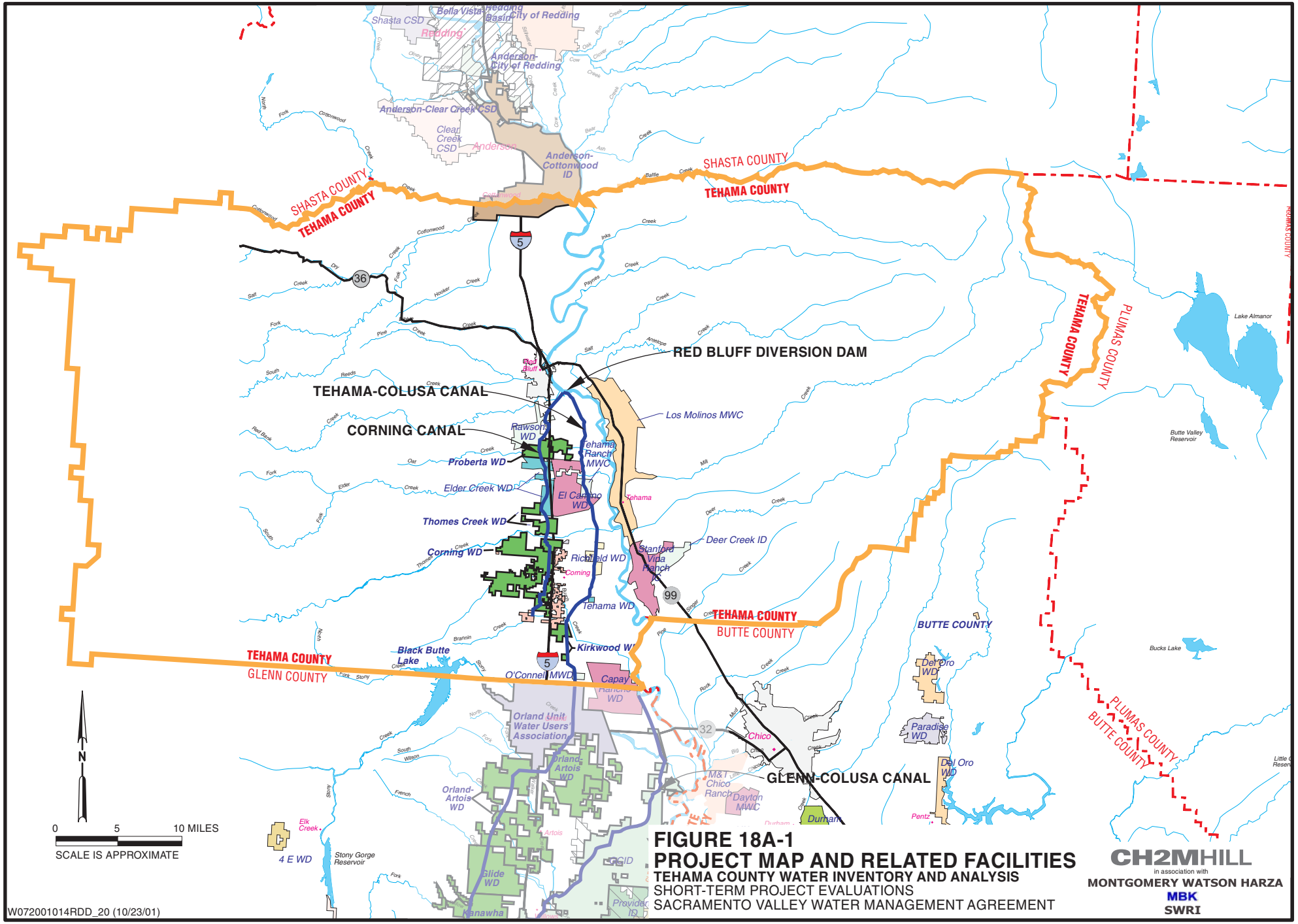

FIGURE 18A-1
PROJECT MAP AND RELATED FACILITIES
TEHAMA COUNTY WATER INVENTORY AND ANALYSIS
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI

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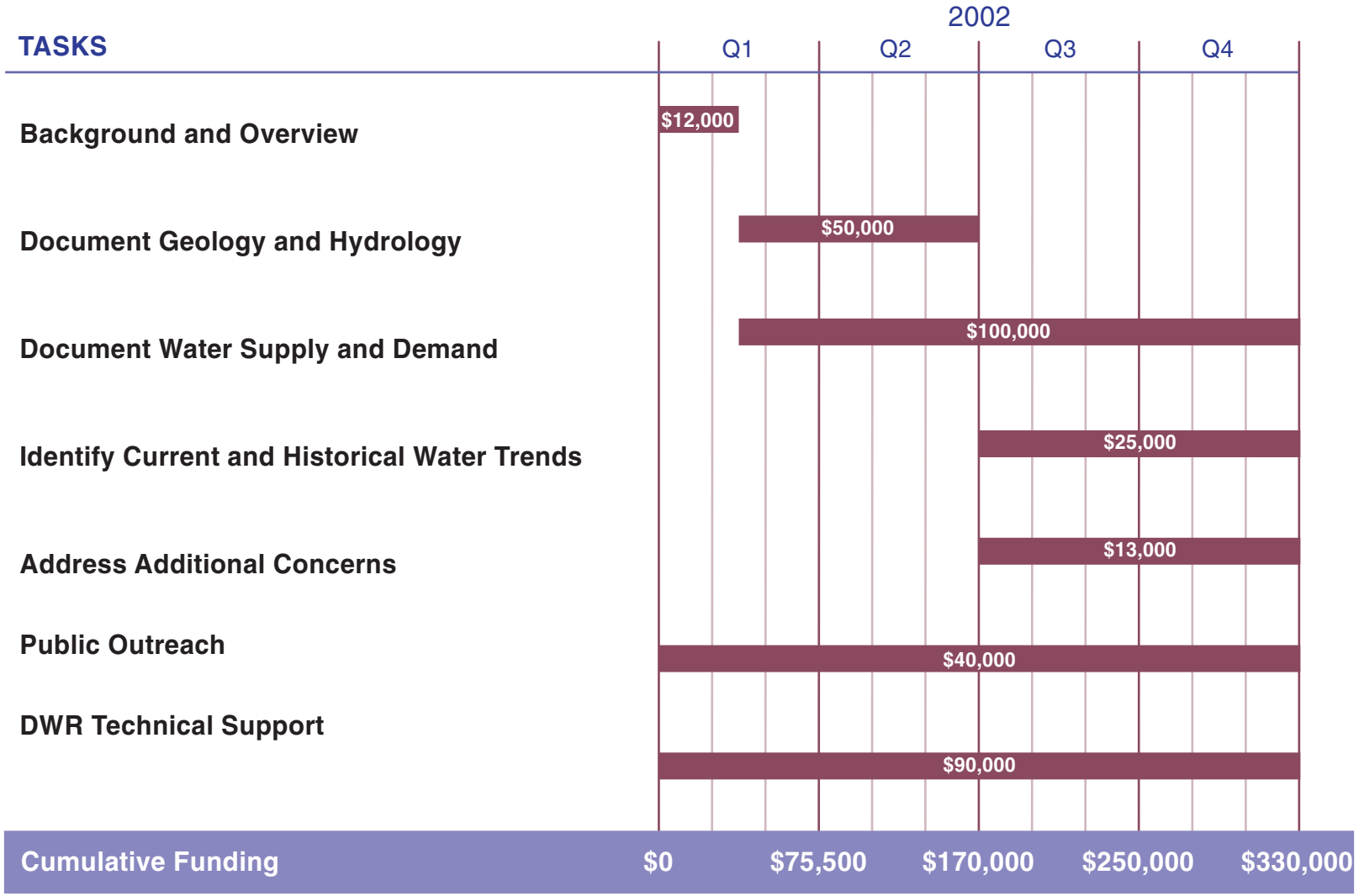

FIGURE 18A-2
PRELIMINARY IMPLEMENTATION SCHEDULE
TEHAMA COUNTY WATER INVENTORY AND ANALYSIS
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI

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